CLAIMS

What is claimed is:

1. A purified tumor necrosis factor related apoptosis inducing ligand (TRAIL) polypeptide comprising an amino acid sequence that is at least 90% identical to an amino acid sequence selected from the group consisting of amino acids 1 to 281 of SEQ ID NO:2 and amino acids 1 to 291 of SEQ ID NO:6, wherein said TRAIL polypeptide induces apoptosis of Jurkat cells.

2. A TRAIL polypeptide of claim 1, comprising an amino acid sequence selected from the group consisting of amino acids 1 to 281 of SEQ ID NO:2 and amino acids 1 to 291 of SEQ ID NO:6.

3. A purified human TRAIL polypeptide encoded by the cDNA insert of the recombinant vector deposited in strain ATCC 69849.

4. A purified soluble TRAIL polypeptide comprising an amino acid sequence that is at least 90% identical to a sequence selected from the group consisting of:

a) the extracellular domain of human TRAIL (amino acids 39 to 281 of SEQ ID NO:2); and

b) a fragment of said extracellular domain;

wherein said soluble TRAIL polypeptide induces apoptosis of Jurkat cells.

5. A TRAIL polypeptide of claim 4, comprising an amino acid sequence selected from the group consisting of:

a) the extracellular domain of human TRAIL (amino acids 39 to 281 of SEQ ID NO:2); and

b) a fragment of said extracellular domain, wherein said fragment induces apoptosis of Jurkat cells.

6. A TRAIL polypeptide of claim 5, comprising the sequence of amino acids x to 281 of SEQ ID NO:2, wherein x represents an integer from 39 to 95.

7. A TRAIL polypeptide of claim 6, comprising amino acids 95 to 281 of SEQ ID NO:2.

8. A TRAIL polypeptide of claim 4, wherein said soluble TRAIL polypeptide comprises conservative substitution(s) in an amino acid sequence selected from the group consisting of:

a) the extracellular domain of human TRAIL (amino acids 39 to 281 of SEQ ID NO:2); and

b) a fragment of said extracellular domain;

wherein the conservatively substituted TRAIL induces apoptosis of Jurkat cells.

9. A purified TRAIL polypeptide, wherein said polypeptide is a fragment of the human TRAIL protein of SEQ ID NO:2, wherein said fragment induces apoptosis of Jurkat cells.

10. A TRAIL polypeptide of claim 9, wherein said fragment is a soluble polypeptide.

11. A fusion protein comprising a leucine zipper peptide and a soluble TRAIL polypeptide of claim 4, wherein said leucine zipper peptide is selected from the group consisting of the peptide of SEQ ID NO:14, a peptide consisting of amino acids 1 to 34 of SEQ ID NO:15, a peptide consisting of amino acids 2 to 34 of SEQ ID NO:15, a peptide consisting of amino acids 3 to 34 of SEQ ID NO:15, the peptide of SEQ ID NO:16, and the peptide of SEQ ID NO:17.

12. A fusion protein comprising a leucine zipper peptide and a soluble TRAIL polypeptide of claim 5, wherein said leucine zipper peptide is selected from the group consisting of the peptide of SEQ ID NO:14, a peptide consisting of amino acids 1 to 34 of SEQ ID NO:15, a peptide consisting of amino acids 2 to 34 of SEQ ID NO:15, a peptide consisting of amino acids 3 to 34 of SEQ ID NO:15, the peptide of SEQ ID NO:16, and the peptide of SEQ ID NO:17.

13. A fusion protein comprising a leucine zipper peptide and a soluble TRAIL polypeptide of claim 6, wherein said leucine zipper peptide is selected from the group consisting of the peptide of SEQ ID NO:14, a peptide consisting of amino acids 1 to 34 of SEQ ID NO:15, a peptide consisting of amino acids 2 to 34 of SEQ ID NO:15, a peptide consisting of amino acids 3 to 34 of SEQ ID NO:15, the peptide of SEQ ID NO:16, and the peptide of SEQ ID NO:17.

14. A fusion protein of claim 13, wherein said TRAIL polypeptide consists of amino acids 95 to 281 of SEQ ID NO:2.

15. A fusion protein of claim 13, wherein said leucine zipper is a peptide consisting of amino acids 1 to 34 of SEQ ID NO:15.

16. A fusion protein of claim 11, additionally comprising the growth hormone leader of SEQ ID NO:19 at the N-terminus of said fusion protein.

17. A fusion protein of claim 16, wherein said leucine zipper is a peptide consisting of amino acids 1 to 34 of SEQ ID NO:15, wherein said TRAIL polypeptide consists of amino acids 95 to 281 of SEQ ID NO:2.

18. The fusion protein of claim 16, wherein said fusion protein comprises the amino acid sequence presented in SEQ ID NO:11.

19. A fusion protein of claim 11, additionally comprising a CMV leader, comprising amino acids 1 to 29 of SEQ ID NO:9, at the N-terminus of said fusion protein.

20. The fusion protein of claim 19, wherein said fusion protein comprises the amino acid sequence presented in SEQ ID NO:13.

21. A protein expressed by CHO cells transformed with an expression vector comprising the nucleotide sequence presented in SEQ ID NO:10.

22. A protein expressed by CHO cells transformed with an expression vector comprising the nucleotide sequence presented in SEQ ID NO:12.

23. An oligomer comprising at least two soluble TRAIL polypeptides of claim 4.

24. An oligomer comprising two or three soluble TRAIL polypeptides of claim 5.

25. An oligomer comprising two or three soluble TRAIL polypeptides of claim 6.

26. An oligomer comprising at least two fusion proteins of claim 11.

27. An antibody that specifically binds a TRAIL protein of claim 1.

28. An antibody according to claim 27, wherein said antibody is a monoclonal antibody.

29. A method of inducing death of cancer cells, comprising contacting TRAIL-sensitive cancer cells with a TRAIL polypeptide according to claim 1.

30. A method of inducing death of cancer cells, comprising contacting TRAIL-sensitive cancer cells with an oligomer according to claim 23.